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Translation

PATENT COOPERATION TREATY

PCT/EP2003/000004



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2001P20499WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/000004	International filing date (day/month/year) 02 January 2003 (02.01.2003)	Priority date (day/month/year) 10 January 2002 (10.01.2002)
International Patent Classification (IPC) or national classification and IPC G01S 1/56		
Applicant SIEMENS AKTIENGESELLSCHAFT		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 13 June 2003 (13.06.2003)	Date of completion of this report 23 April 2004 (23.04.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed☒ the description:pages 1-21, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☒ the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement under Article 19

pages _____, filed with the demand

pages 1-14, filed with the letter of 15 April 2004 (15.04.2004)☒ the drawings:pages 1/8-8/8, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. ☐ The amendments have resulted in the cancellation of:☐ the description, pages _____☐ the claims, Nos. _____☐ the drawings, sheets/fig _____5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims	1-14	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO

2. Citations and explanations

The invention relates to methods for determining the position of a mobile object, and to a user terminal of a radio communication system.

The closest prior art, WO-A-99/33302 (D3), discloses a method for determining the position of a mobile object, and a user terminal, involving the use of at least one radio signal with a rotating transmission characteristic of at least one reference station (cf. D3, page 2, line 6 to page 3, line 3; page 3, line 20 to page 6, line 20; page 8, line 1 to page 9, line 36, and figures).

Therefore, the problem to be solved can be regarded as that of conserving radio resources by means of multiple use of the radio signals.

The invention differs from this closest prior art for the most part by the following features according to claim 1, namely that:

- the mobile object is informed of the relationship between the orientation of the transmission characteristic and reference events, the reference events being defined data structures or data content of the radio signal,
- when detecting the radio signal, the mobile object

verifies the presence of a reference event, and based on the reference event, the mobile object detects the orientation of the transmission characteristic, and based on the orientation of the transmission characteristic, the mobile object determines a relative position with respect to the reference station.

According to claim 13, the invention is interpreted as a device for receiving a relationship between the orientation of the transmission characteristic and reference events, the reference events being defined data structures or data content of the radio signal, a device for verifying the presence of a reference event, a device for detecting the orientation of a transmission characteristic of the radio signal based on the reference event, and a device for determining a relative position with respect to a reference station based on the orientation of the transmission characteristic.

D3 does not address this problem: the solution in D3 differs from the solution provided by the present invention. The features of the defined data structures and data content contain additional information for position determination, independently of the method for determining the position in the radio signals used for position determination. Although the message regarding the relationship between the orientation of the transmission characteristic and reference events is transmitted separately, the transmission takes place only once. If, according to D3, the base station transmits messages containing the angle, then it is clear that these messages are used exclusively for localization, and therefore the method of D3 requires greater outlay with respect to the utilization of radio resources.

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The above-mentioned features, which solve the problem, are neither referred to by the cited documents nor disclosed by any other sources.

Claims 2-12 relate to further special features of the methods according to claim 1.

Claim 14 relates to further special features of the device according to claim 14.